

M DOES EQUAL ONE—

Many Space Firsts Scored During Gemini XI Mission

Rendezvous in the first revolution, docking, two periods of extravehicular activity, an exercise in the dynamics of two spacecraft linked together by a 100-foot strap and full-automatic reentry highlighted the Gemini XI missions which ended yesterday morning with splashdown 3000 yards from the USS *Guam* at 8 am CST after a total flight time of 71 hours 16 minutes.

Gemini XI lifted off Launch Complex 19 at 8:42:26 am CST and was inserted into an orbit measuring 87 nm at perigee and 151 nm at apogee—precisely the intended ephemeris. Velocity at insertion was 17,507 mph. All events in the launch phase were completely nominal, but shortly after insertion the crew reported that window fogging on the outside surfaces was likely to interfere with high-resolution photography activities. The spacecraft windows apparently fogged slightly in spite of glass covers that were jettisoned during exit from the atmosphere.

A small plane-change correction, using the Orbit Attitude and Maneuvering System (OAMS) thrusters, was made shortly after insertion. The next maneuver, terminal phase initiation (TPI), was calculated by the crew using backup computation procedures—one of the operational objectives of the mission. The actual 141 feet-per-second posigrade maneuver agreed quite closely with ground computations.

Over the Tananarive station, the crew reported visual sighting of the Agena rendezvous vehicle at a range of about 75 miles. By

the time the spacecraft reached the Carnarvon, Australia station, the range had closed to 15.2 miles. The TPI maneuver to raise the Gemini's orbit to coincide with that of Agena was performed during the Carnarvon pass.

'Would you believe M=1?'

Over Hawaii, a braking or "velocity match" maneuver was made with the OAMS thrusters to essentially complete the rendezvous after three-quarters of a revolution. During the first stateside pass, command pilot Pete Conrad called spacecraft communicator John Young in the Mission Control Center and said, "John, tell Mr. Kraft 'Would he believe M=1?'" (M=1 refers to rendezvous at first apogee). "He believes it," replied Young.

Docking took place at a ground elapsed time of 1:34:18 as the Gemini/Agena combination crossed the US east coast and began the second revolution.

First Right-Seater Docking

Pilot Richard Gordon carried out the re-docking maneuver—the first docking done by a "right-seater."

A calibration burn of the Agena primary propulsion system (PPS) of 104 feet per second was made at 4:28:32 GET out of plane to the north. The main purpose of the burn was to gain confidence in the PPS prior to the major burn two days later to reach the intended 750nm apogee.

Other scientific and technical and photographic experiments were run for the remainder of

the first day until the crew's scheduled sleep period at eight hours after liftoff.

Following several experiment runs the following morning, the crew went into a long preparation checklist for Gordon's planned one hour and 55 minutes of extravehicular activity.

EVA Cut Short

At approximately 24 hours GET, Gordon's hatch was opened for the umbilical extravehicular activity as the spacecraft crossed the California coast south of San Diego. Gordon egressed on schedule but after a short period of time it became apparent that the workload was overpowering his suit cooling. He began breathing quite heavily and perspiring to the point where he lost vision in his right eye. With the concurrence of the flight director back at Mission Control, the umbilical extravehicular activity was terminated after 44 minutes. Gordon ingressed the spacecraft and the cabin was repressurized. During the period he was outside, he was able to attach the Agena tether to the Gemini index bar for the gravity gradient experiment later in the mission, and he retrieved the S-9 Nuclear Emulsion Experiment package from the Agena and the film cartridges from the EVA motion picture cameras.

Litterbugs

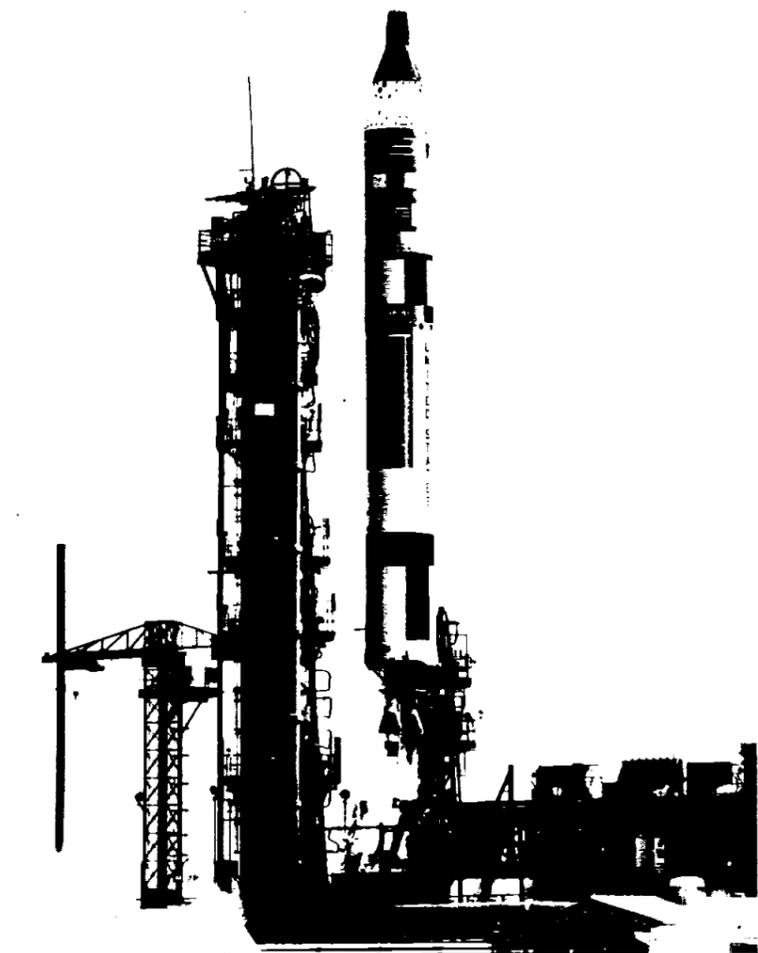
During the next stateside pass, the cabin again was depressurized for a "garbage dump" of umbilical EVA gear, empty food wrappers and other non-essential items.

Reveille for the Gemini XI crew was sounded at 11:45 pm CST Tuesday at an elapsed time of 39 hours, and preparations were begun for the Agena PPS burn which would propel the Gemini/Agena combination to a new record altitude of 750 nm.

Following an ullage burn of the Agena secondary propulsion system (SPS), a 918 feet-per-second posigrade PPS burn at 1:16 am CST Wednesday boosted the spacecraft to an apogee of 739.4 nm. The burn was begun at the 156 nm perigee, about 250 miles west of the Canary Islands, and apogee was reached at 2:04 am CST 150 miles west of Brisbane, Australia. Conrad, over the air-ground link, said, "Whoop-de-do! Look at it go!"

The second major PPS burn (retrograde) to lower apogee was made at 4:35 am CST. Energy subtracted from the

(Continued on page 2)



T-ZERO—Gemini XI September 12 lifted off Launch Complex 19 at 8:42:26 CST in pursuit of the Agena rendezvous vehicle with which it docked one hour and 34 minutes later. Gemini XI was inserted into an initial orbit with an apogee of 151 nm and a perigee of 87 nm at a velocity of 17,508 mph.

Surveyor B Launching Scheduled for Tuesday

The United States will continue its program of scouting potential Apollo landing sites on the Moon with the launch of a sister spacecraft to the highly successful Surveyor I during a four-day period beginning September 20.

This will be the second of seven Surveyor missions intended to develop the technology of soft-landing on the Moon and to provide scientific and engineering data to support the Apollo manned landing program.

Two NASA spacecraft have begun the manned landing site survey of the Moon:

- Surveyor I soft-landed on June 1 and returned more than 11,000 high resolution television pictures of its landing area centered at 2.5 degrees South latitude and 43 degrees West longitude.

- Lunar Orbiter I photographed nine potential manned landing sites across the equator from August 18 to August 29. These photographs are currently being analyzed.

This second Surveyor (designated Surveyor B) will be aimed to land in Sinus Medii, a maria at the center of the visible face of the Moon. This area was the fifth selected site photographed by Lunar Orbiter I.

Surveyor B will be launched by an Atlas-Centaur rocket from Complex 36 at Cape Kennedy, Fla. The spacecraft will be injected directly into a lunar trajectory for a 63-hour trip to the Moon.

At the Moon, Surveyor must accomplish the critical terminal descent and soft landing. For

this purpose it is equipped with a solid propellant retrorocket and three throttleable liquid fuel vernier engines; a flight programmer, autopilot and analog computer; and radars to determine altitude and rate of descent.

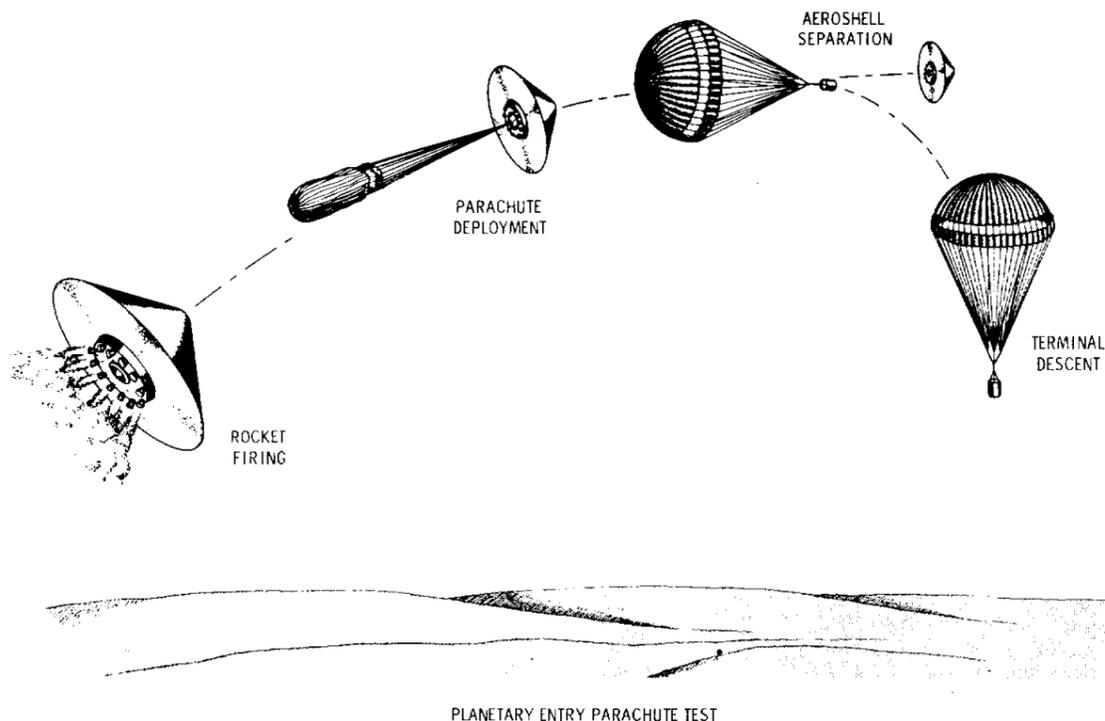
The main braking force is provided by the retrorocket. After it is jettisoned, data from the radars are processed by the onboard computer to throttle the verniers automatically so that Surveyor touches down softly on the lunar surface.

Surveyor B will face an additional factor not experienced by Surveyor I in its terminal descent and landing. The Surveyor I landing site was chosen for a

(Continued on page 8)



SKULL SESSION—Not all conferences in the Mission Control Center are held by means of communications loops. Here a foursome huddles around the flight director's console. Left to right are Electrical, Environmental and Communications Systems Engineer (ECON) John W. Aaron, MSC Director of Flight Operations Christopher C. Kraft, Jr., Gemini XI Mission Director William C. Schneider and Gemini XI Flight Director Clifford Charlesworth.



PLANETARY ENTRY PARACHUTE TEST

BUT NOT ON MARS . . . YET—

Martian Parachute Entry System Successfully Passes First Tests

Data from on-board cameras and other recovered instruments have confirmed that a pioneering space experiment over New Mexico on August 30 employing the Earth's upper atmosphere as a Martian research laboratory was a complete success.

The experiment, launched aboard a balloon by NASA, was the first of a series of high-altitude investigations. NASA is seeking information on parachute designs and techniques that might be used to land instrumented capsules on the surface of Mars.

All instruments and equipment performed as planned and the desired basic engineering information was obtained, John C. McFall, NASA project manager of the Planetary Entry Parachute Project, reported.

"The experiment has provided a solid data base with which we can compare and correlate the results of later flight tests involving parachutes and flight units of different sizes and shapes," McFall said.

At the 24-mile altitude where the flight unit was released from the balloon and rocket-propelled to 800 mph, density of the thin atmosphere closely corresponds to that estimated for Mars.

In the test a 15-foot diameter, disk-shaped body, or aeroshell, was employed. Soon after rocket burnout the parachute was deployed and within seconds the parachute and its cylindrical instrument payload separated from the aeroshell.

Recovery of the two separate instrumented portions of the flight unit required more than a day. All were in good condition.

A cylindrical payload centered in the 1,600-pound flight unit included a packaged ring-sail parachute, cameras and other instruments to record loads and parachute deployment.

When fully opened, the test parachute canopy had a diameter of 84 feet. The canopy has 13 rings of fabric. Crescent-shaped air gaps between the rings permit air to flow through, averting excessive swinging.

A ground command triggered release of the flight unit from the balloon. Later programmed events were controlled by timer mechanisms on the parachute payload and the "aeroshell," the disk-shaped portion of the flight unit.

Four seconds after dropping from the balloon, the 12 rocket engines were ignited to propel the flight unit upward into an arching trajectory. Desired test velocity was about Mach 1.2, or about 850 miles per hour. Under these conditions at the high altitude, the velocities and dynamic pressures attained closely correspond to those of a capsule descending through the Martian atmosphere.

With these conditions reached, the test parachute was deployed. About one-half second later, the instrument and ballast package were released from the aeroshell and pulled out by the inflation of the parachute in its reefed condition.

About 4 seconds later, the parachute was fully opened. In another 22 seconds, the ballast was dropped from the parachute payload.

Approximately two hours were required for the 26 million-cubic-foot balloon to bring the flight unit to the desired altitude.

When an on-board magnetometer confirmed that the flight unit, tilted 60 degrees to horizontal, was aimed in the proper direction, a radioed command activated the release lanyard.

Release from the balloon automatically started the timers, tape recorders and motion picture cameras on the flight unit. Accelerometers recorded data throughout the flight.

The 12 rockets were angled around a ring so that the thrust provided by each was directed through the center of gravity of the total flight unit. Each solid propellant rocket provides a maximum thrust of 3,400 pounds. Burning time is 1.5 seconds.

No air-to-ground telemetry was involved. Radar tracking,

visual tracking by aircraft, homing beacons and camera cross fixes were used to monitor the experiment and to assist in recovery of the payload and aeroshell.

Because the desired data was recorded by cameras and tape recorders, evaluation of the flight's success was expected to take three or four days.

Two cameras were on the aeroshell and three on the parachute payload. Two of the aeroshell cameras and one on the payload faced rearward to record the parachute deployment. One payload camera faced to the side to observe the position of the horizon. The third payload camera faced ahead to record changes in motion.

The parachute project is managed by the NASA Langley Research Center, Hampton, Va., and is coordinated with the Jet Propulsion Laboratory, Pasadena, Cal., which has management responsibility for the Voyager program. The payload was designed and built by Langley.

Contract Group Forms Houston Area Chapter

A formal charter meeting of the Space City Chapter of the National Contract Management Association (NCMA) will be held tonight starting at 7 at the Clear Lake Country Club. The program will include a fellowship hour, dinner, presentation of the charter, election of officers and chapter directors. NCMA officers will make the charter presentation.



Featured speaker for the evening will be Ernest W. Brackett, special assistant to the NASA Assistant Administrator for Industry Affairs. Brackett will speak on "Common Industry and Government Problems."

Brackett joined NASA in January 1959 as director of

procurement and later became assistant deputy associate administrator for procurement policy. Prior to joining NASA, Brackett was on the staff of the director of procurement and production of the USAF Air Materiel Command, Wright-Patterson AFB, Ohio. He holds a BA in law from Cornell and practiced law in Utica, N.Y., from 1925 to 1942 and served in the Air Force from 1942 to 1946. Returning to civilian life, he joined the Department of the Air Force. He is a member of the bar in New York and Washington, D.C. and is admitted to practice before the US Supreme Court.

Brackett is currently chairman of both the NASA Contract Adjustment Board and the NASA Inventions and Contributions Board.

Gemini XI

(Continued from page 1)

orbit was 911.8 feet-per-second and the new orbital measurements were then 164.2 nm apogee by 156.2 perigee.

During the second high-apogee pass over the Carnarvon station, Carnarvon spacecraft communicator Bill Garvin asked, "Have you got a good view?" "Bill," replied Conrad, "it's utterly fantastic. You wouldn't believe it!"

While in the high-apogee orbit, the crew of Gemini XI unstowed cameras for making photos for the S-5 Synoptic Terrain Photography and the S-6 Synoptic Weather Photography experiments.

Also during the early morning hours, prior to the Agena PPS burns, mission control gave Gemini XI a "Go" for landing area 45-1—the prime end-of-mission landing area in the West Atlantic where the prime recovery vessel LPH *Guam* was on station.

'Houston Looks Beautiful . . .'
The next major mission activ-

ity was pilot Dick Gordon's "stand-up" EVA in which he photographed stars for the S-13 Ultraviolet Photograph experiment during the night passes and terrain features during day passes. "Man, does Houston ever look beautiful down there," said Gordon as Gemini XI passed over MSC. Tell Dr. Gilruth I will take his picture . . . It is beautiful down there. Boy, this is not a job—it is a privilege." Total stand-up EVA time until cabin repressurization was about two hours and nine minutes.

Separating from the Agena, Gemini XI began the tether dynamics exercise in which slight tension was kept on the 100-ft nylon strap and a slight spinning motion was imparted to create a small gravity field.

A "stand-off" rendezvous following a night of separation from the Agena was carried out successfully. Preparations for retrofire began immediately afterward for landing in the primary recovery area.

145 Years' Total Service



LONG-TIMERS—Technical Services Division employees September 12 were recognized in a ceremony in Building 10 for length of federal service. Front row, left to right, with years' service following the names, are: TSD Chief Jack A. Kinzler 25; Homer D. Hill 25; James W. Bailey 25; Lewis H. Williams 25; William E. Drummond 10. Second row: Fred Chalfont 10; William A. Wohnhaas 5; David L. Starkey 5; Elwood C. Hicks 5, and Richard W. Bradshaw, Sr. 5. Not in photo: Melvin L. Patrick 5.

COMPETE IN WAKEFIELDS—

Space Flight Not Only Flight Popular at MSC

With all the talk of apogees of 750 miles, missions lasting two weeks and longer, EVA, rendezvous and docking, the average MSC employee is likely somewhat jaded when it comes to any form of flight on a smaller scale. Not so with at least three men at MSC whose off-duty passion is pursuing free-flight rubber-powered model aircraft through chiggers and briars to their landing places.

All three of the men have one thing in common: each has been or will be on the US team in international competition for the Wakefield Cup.

George Xenakis of Guidance and Control Division next July will be a member of the three-man US team in the bi-annual international Wakefield free-flight competitions in Czechoslovakia. Xenakis made the team by surviving one of six regional eliminations and a three-day fly-off among 26 modelers at Bong Field, Wisconsin where scoring was for the best three of 15 flights.

MSC was also represented in the 1965 Wakefield competitions held in Finland. Frank Parmenter of Technical Services Division was on the US team which placed third behind Sweden and Yugoslavia. Parmenter was one of 12 contestants tying for first place with perfect scores. In a

fly-off, he placed seventh in the individual category.

Some seven years before MSC was created, Warren Gillespie of the Director of Engineering and Development staff competed as a member of the US team in the 1954 Wakefield on Long Island. The US placed first followed by Great Britain in the team category. Gillespie placed tenth in individual scoring.

"In the 'old days,'" said Gillespie, "we had four-man teams, larger rubber motors and had to launch the models from the ground. Nowadays, they let them hand-launch the airplanes."

Gillespie in 1935 competed in the National Junior Air Races in Cleveland, Ohio. He was sponsored by the now-defunct *Houston Press*.

Transportation for US teams to and from today's international Wakefield competitions is furnished jointly by the National Aeronautic Association and the Academy of Model Aeronautics. Timing, records homologation and other phases of competition monitoring is handled by the *Federation Aeronautique Internationale* (FAI), the international body responsible for certifying records and officiating at civil, sport, military and space flight competitions and record attempts. National Aeronautic

Association is the United States FAI member organization to which belong specialized organizations for such activities as soaring, parachuting, free ballooning and aeromodelling.

The Wakefield competitions had their start in 1927 when Sir Charles Wakefield presented the Society of Model Aircraft Engineers a prize fund and a silver perpetual trophy for annual international rubber-powered airplane model competitions. Later, the competitions were held bi-annually.

Wakefield competition rules state that free-flight models must have a wing area no greater than 297 square inches, weigh no less than eight ounces and have a rubber motor weighing no more than 50 grams. After a motor run of 30 to 40 seconds, the propeller folds back along the fuselage and the flight duration is counted up to a maximum of 180 seconds within sight of the timekeeper.

Often, thermal updrafts carry the models for much longer periods than 180 seconds, but to avoid the model flying out of sight over the horizon, each is fitted with a "dethermalizer" device—usually a lighted fuse/rubberband arrangement that causes the horizontal tail to shift to a negative angle—to bring the model down.

The US won the Wakefield on

an individual basis in 1930, 1931, 1932, 1935, 1939, 1953 and 1961 and on a team basis in 1954.

Other categories now included in the free-flight competitions are gas-powered and towline glider

events, and radio-controlled models. Competitions in the wire-controlled speed and stunt models and for indoor rubber-powered models, flown in large coliseums and dirigible hangars, are held on alternate years.



AERODYNAMIC EFFICIENCY MINIATURIZED—Frank Parmenter is shown with the "Langley" design rubber-powered model with which he tied with 11 others for first at last year's Wakefield in Finland and placed seventh in the fly-off.



TWELVE YEARS AGO—Warren Gillespie was a member of the 1954 US Wakefield team at Long Island, placing 10th in the individual category. The US team placed first that year over Great Britain.



THIRTY-ONE YEARS AGO—A somewhat younger Gillespie boards an airliner en route to the 1935 National Junior Air Races at Cleveland, Ohio. With him are Bob Montgomery, Fort Worth champion and Roy Bacus of the Fort Worth Press. Gillespie was sponsored by the *Houston Press*.



COMPETITIVE THREESOME—Balsa wood and fabric provide a contrast to the exotic ablative materials and metals represented by scale models of the Apollo spacecraft as three past and present Wakefield international free-flight model competitors spread their wings. George Xenakis, front, will be a member of the three-man US team next July in Czechoslovakia. Frank Parmenter, left, was a US team member last year in Finland, and Warren Gillespie was on the team in 1954 at Long Island.

SURVEYOR SIGHTING UNLIKELY—

Lunar Orbiter Snaps Last Photos of Moon



EARTHSET—Lunar Orbiter August 23 in its 16th orbit around the moon made this first photograph of the whole sphere of the earth. The US east coast is in the upper left, southern Europe toward the dark nightside of the earth and Antarctica is at the bottom of the earth crescent. Looking closely, one can see a tramp steamer clearing Lisbon harbor.

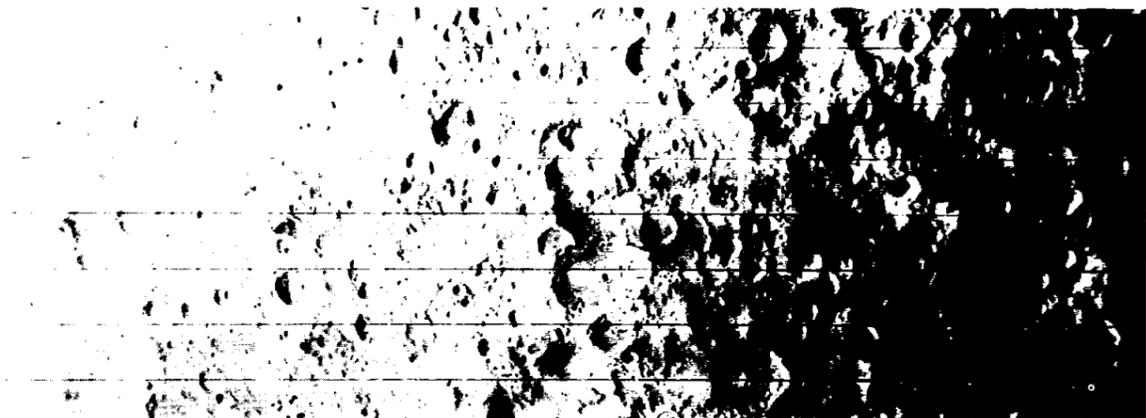
Project officials at the NASA Langley Research Center announced August 30 that all picture taking and preliminary readouts by the Lunar Orbiter spacecraft had been completed.

The spacecraft took 32 pictures the previous day with high and medium resolution cameras of Site 9.1 where Surveyor I would most likely be seen. Because of the continued smear problem with the high-resolution camera aboard Orbiter, Surveyor I was not expected to be seen in the photos.

The medium-resolution camera continued taking pictures of excellent quality but project officials considered the possibility of Surveyor I being seen in the pictures as remote.

Six photos of Site 9.1 were read out at various ground stations and a quick look at the first two of these gave no indication of the Surveyor spacecraft.

The rest of the 32 Site 9.1 pictures taken with both high and medium-resolution cameras were read out over the following two days. They were sent for processing to Eastman Kodak Co., Rochester, N.Y. and then back to Langley Research Center for detailed analysis. Completed pictures were not expected before a week or ten days.



LUNAR BACKSIDE—Upper photo was made with Lunar Orbiter's high-resolution camera August 21 with the sun at a 20° elevation from the left. This photo shows objects about eight times smaller than moderate-resolution photos of the same area. Lower photo is the most highly-detailed photo ever made of the moon's unseen face, and was made with the spacecraft's moderate-resolution camera. To no one's great surprise, the backside of the moon looks a great deal like the frontside, except now someone has to come up with names for all these new craters, rills, mountains, walls, oceans, gulfs, seas, bays and other moonmarks. Since the moon's rotation about its axis coincides with its orbital period around the earth, the moon always presents the same side to the earthman.



Postmark Space



ORBITING MAILBOX—A letter orbited aboard the Gemini VIII Agena rendezvous vehicle and retrieved during the Gemini X mission by EVA pilot Michael Collins is proudly displayed by NASA Associate Administrator for Manned Space Flight Dr. George E. Mueller, center, MSC Director Dr. Robert R. Gilruth, left, and Gemini Program Office Manager Charles W. Mathews, right.

To the Victor Goes the RCA

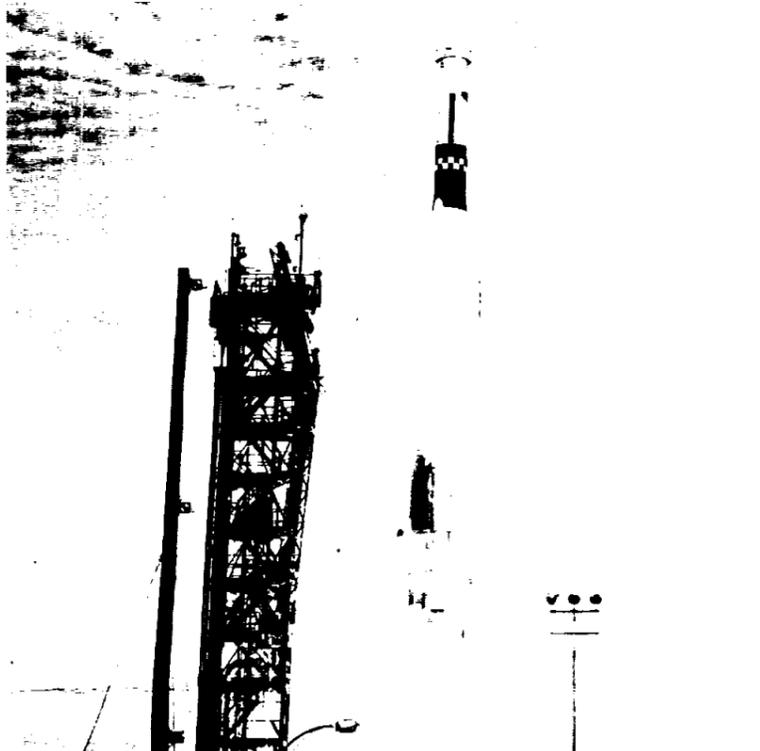


FREE TUBE—The RCA television set above will go to the MSC Federal Credit Union member whose name is drawn from the hopper in the final drawing September 30. Credit Union treasurer Edward Campagna and Credit Union Supervisory committeemen Sonia Schoendorf guard the set in the meantime. The fourth Credit Union "dinner-for-two" drawing September 9 was won by Drue Stubbs of Administrative Services. The dinner was donated by Club Seville of the Nassau Bay Motor Hotel.



PRE-LAUNCH CHOW—Gemini XI crewmen Richard Gordon and Charles Conrad stow away the traditional launch morning breakfast of filet mignon, eggs, fruit juice, toast and coffee at the crew quarters before leaving to suit up at the ready room at Launch Complex 16.

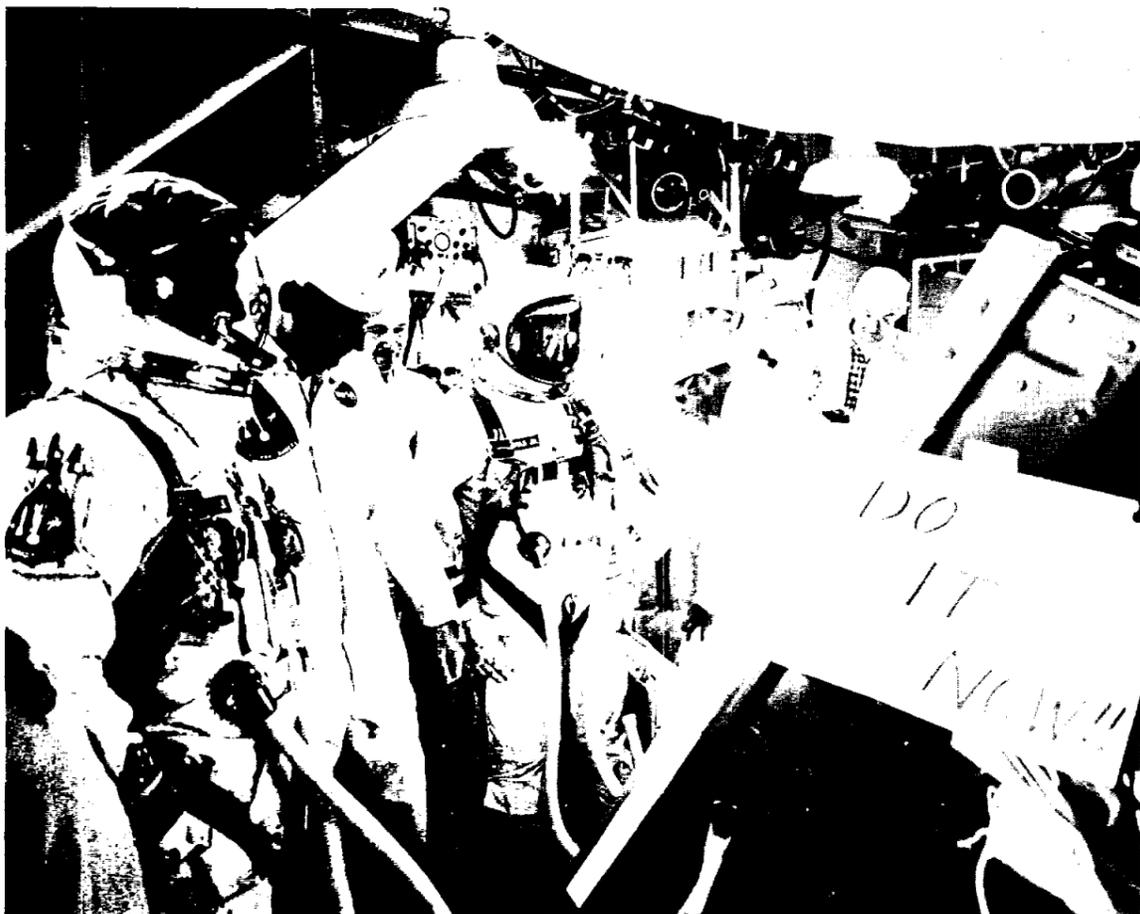
Camera Captures Gemini XI Preparation For 3-Day Trip



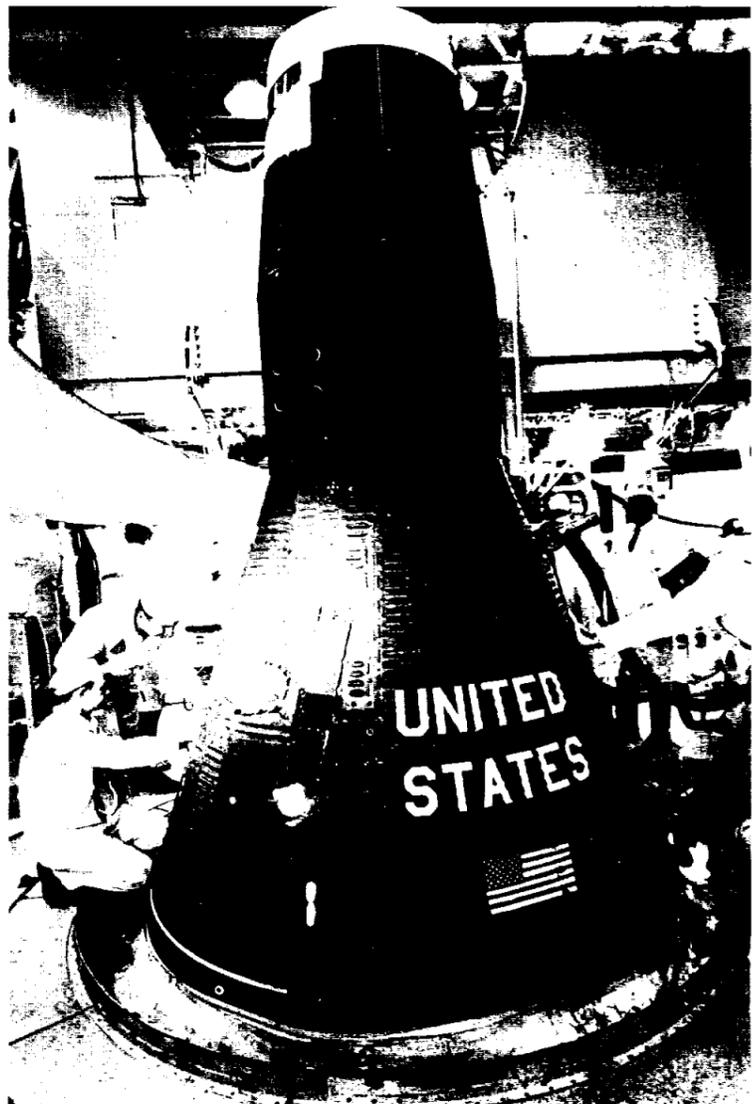
QUARRY—The Agena rendezvous vehicle for Gemini XI, placed into orbit by an Atlas standard launch vehicle, lifted off at 7:05:01 CST and was inserted into an orbit with an apogee of 166 nm and a perigee of 156 nm. Gemini XI docked with the Agena at 1:34:18 Gemini ground elapsed time near the end of the first revolution.



UNIFORM OF THE DAY—Gemini XI crewmen Conrad and Gordon leave the ready room to board the crew transfer van for the ride to Launch Complex 19. Portable air conditioners circulate air through their suits until they plug into the spacecraft environmental control system suit circuits.



POINT OF DEPARTURE—Technicians in the Launch Complex 19 white room ready the crew for ingress and hatch closure. Prior to actual hatch closure, several checks of the crew/spacecraft interface are run. A short hold in the simultaneous countdown was called when the command pilot's hatch would not seal properly. The pad crew, believing the third try was a charm, placed a hand-lettered placard on the right hatch which said, "Do It Now!!!" At right, the white room prepares to secure all white room equipment prior to lowering of the erector.



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Gemini IV Chest Pack Loaned to Smithsonian

The emergency life-support chest pack worn by Gemini IV pilot Edward White during that mission's extravehicular activity has been placed on long-term loan to the National Air Museum of the Smithsonian Institution

Elks Schedule Dance Sept. 24

Employees are invited to attend a dance Saturday September 24 at the Kemah-Clear Lake Elks Lodge. The social hour begins at 8 pm followed by dancing from 9 pm until 1 am. Dance music will be supplied by Cole's Four. A donation of \$1 per person is requested.

The Kemah-Clear Lake Elks Lodge is on FM 518 just west of Kemah. For reservations and further information call entertainment committee chairman R. E. Pryor at 3406.

Toastmasters Offer Workshop For Speechcraft

Does your throat get dry, your mind go blank and your feet get heavy when you are scheduled to give a briefing, presentation or speech? Do you feel like the character at right looks when you are called upon to speak before a group?



Then why not do something about it. A painless Speechcraft Workshop, jointly sponsored by the MSC Toastmasters Club and the MSC Speakers Bureau, will be held next Tuesday from 6 to 8 pm in the presentation room (Room 966) on the ninth floor of Building 2.

All MSC employees as well as Toastmasters Club members and Ellington AFB Toastmistresses who want to improve and polish their public-speaking abilities are invited to attend the Workshop.

Useful pointers on the use of audio-visual aids and a complete orientation in the purpose and benefits of Toastmastering, as well as an introduction to the MSC Speakers Bureau program, will be included in the Workshop.

Seating capacity in the presentation room is limited and reservations should be made as soon as possible with Virginia Thompson at 3371.

In requesting the pack for display, Museum director S. P. Johnston said, "We believe that this chest pack represents a fine piece of creative, in-house engineering by NASA and is a significant historical artifact. We should like to place it on exhibit with the umbilical and maneuvering device also used on that important flight."

The Gemini IV chest pack was developed by MSC Crew Systems Division and fabricated at MSC. In addition to providing a regulating function for White's suit pressure, the chest pack served as an emergency oxygen supply in event of a failure of the life-support umbilical.

Help MSC reach its quota in the 1967 United Fund Campaign by pledging your fair share. The campaign begins Monday and runs through the end of September. Let the moths out of your wallets and GIVE!

Take the Pledge For United Fund

Monday marks the start of the 1967 MSC United Fund Campaign. In past years, MSC has attained 100 percent or more of its quota, and there is no reason why the pattern should be broken this year. The United Fund is one of two Center-wide drives held at MSC each year—the other being the National Health Agencies and Federal Service Joint Crusade campaign.

Pledges to the campaign can be met painlessly through monthly or quarterly increments of your total pledge. Team captains will pass among you with pledge cards during the balance of September. Pick your number now so that you won't have to hedge your pledge.

EVERY GOOD GUY



GIVES THE UNITED WAY

OUT OF TEXAS' PAST—

Big Bend Area's Terlingua Tom Ran Private 'Project Mercury'

The newsmedia recently purveyed a fascinating but exasperatingly incomplete report about the arrest of two bayshore citizens on a charge of "having more than one pound of mercury in their possession."

What made the story fascinating was not so much that the act they were reportedly charged with is *not* illegal, but that mercury is such an intriguing commodity. And what makes Hg so intriguing is not so much that it's the only metal on the planet that's liquid at room temperature, but that it's so valuable in Texas for use in oilfield instruments.

For the report stated that the bayshore pair had 333 pounds of mercury "valued at \$2686." That would make the stuff worth more than \$8 a pound, but on the New York commodities market quicksilver is currently quoted at \$430 per 76 pounds, which

figures out to about \$5.66 a pound. Not a bad price when you reflect that a pint weighs about 15 pounds.

Well, it was news to this correspondent that cinnabar juice had ever advanced above the \$3 a pound that Terlingua Tom used to get for it at his hideout in the Davis Mountains.

Tom and his partner Ojinaga Oscar were real, live azogueros, although those are not their real names. The last time we saw Tom he was 86 years old, and his hair was frosty, but he could still operate a Mexican dragline and ride a burro from one end of the Rio Grande to the other. He and Oscar lived in a big, untidy, womanless ranchhouse out in the Big Bend country, near enough to a road and a railroad for their purposes. There they bought dirty mercury, no questions asked, for \$1 a pound.

Tom took large quantities of a

tonic that he made from barberry roots. He had prospected in North, South and Central America for well over half a century, and he firmly believed that he would live to the age of 130 and die rich.

Oscar was middleaged, a professional geologist who dressed like a rodeo star and shared his partner's dreams. He had bossed gold dredges in the Northwest and dug ore in the tropics. Together, he and Tom owned several truckloads of prospecting tools, chemicals and equipment for washing mercury.

They had a big claim, or claimed they had a claim, in Mexico, and while they waited for an angel to finance its exploitation they bought mercury from mysterious travelers who came up from the direction of the Chisos Mountains riding horses, burros, pickups, heaps or sometimes old airplanes or shank's mare.

These desert rats brought the azogue in beer bottles, coke bottles, tequila bottles, Mexican, American and even Spanish flasks. The smart operators used capped three-inch galvanized pipe, cut and threaded to fit the content, because they believed—maybe rightly—that this was the only way a horse could pack mercury without having the sloshing drive him loco.

Where did they get the mercurio? Down around Terlingua they scrounged Hg in abandoned mine dumps and cooked it over mesquite-wood fires in homemade retorts—careful not to inhale any fumes, because one whiff and your teeth fall out. That's one source. They had others, but they never talked about them, just as Tom and Oscar never talked about their secret process for washing the stuff.

When he was high on barberry juice, Terlingua Tom would claim he was an alchemist. Once he gave us a small flask of azogue. "Cherish it," said the old prospector, "and it will bring you good fortune. Mercury is more than a metal. It holds secrets more profound than the philosopher's stone. It is the key to war, for without it there can be no detonators. Mercury is the heart of the atomic engine and the key to the future."

"Also the messenger of the gods," we said, never dreaming that it would name our first space program.

"Speaking of that," he said, "if you know anybody with \$25,000 who wants to become a millionaire in six months, just mention my name. Tomas the Azogueros."

That was about 10 years ago. Tom has 34 years to go if he's still taking his barberry tonic.

— Sigman Byrd

Cost Reduction Corner

Extensive correspondence between the MSC Speakers Bureau and organizations requesting speakers to appear at technical, educational and civic conferences presented the likelihood of a heavier workload for the Bureau. During FY 1966 the Bureau arranged a total of 522 speaker engagements compared to 507 in FY 1965.

Robert O. Workman of the MSC Public Affairs Office Educational Programs and Services Branch developed more efficient work procedures to absorb the additional work load without additional cost. In addition, form letters for some phases of the Speakers Bureau correspondence were devised, and GSA vehicles were used for speaking engagements within 200 miles of MSC, thereby eliminating airline or private vehicle costs. The resulting savings are expected to accrue indefinitely.

Estimated savings to John Q. Taxpayer is \$3000.

Space News Of Five Years Ago

September 19, 1961—NASA Administrator Webb announced that location of the new Manned Spacecraft Center would be in Houston, Texas, the conclusion of an intensive nationwide study by a site selection team. The Manned Spacecraft Center would be the command center for the manned lunar landing mission and all follow-on manned space flight missions. The announcement was the third basic decision on major facilities required for the expanded US Range and the establishment of the spacecraft fabrication center at the Michoud Ordnance Plant near New Orleans, La.

September 20, 1961—Robert Gilruth and other officials of the Space Task Group made survey of the new site of the Manned Spacecraft Center near Houston, Texas to seek temporary operational quarters as soon as possible. Permanent quarters will be constructed under the supervision of the Army Corps of Engineers.

September 21, 1961—D. Brainerd Holmes was appointed NASA's Director of Manned Space Flight Programs. As general manager of RCA's Major Defense Systems Division,

Holmes was project manager for the ballistic missile early warning system (BMEWS).

September 24, 1961—NASA Administrator Webb announced major organizational changes and top-level appointments to become effective November 1. The reorganization should provide a clearer focus on major programs and allow center directors to have a louder voice in policy making. The new appointments included the following directors of major program offices: Ira H. Abbott, Office of Advanced Research and Technology; Homer E. Newell, Office of Space Sciences; D. Brainerd Holmes, Office of Manned Space Flight; and an as yet unnamed Director of Office of Applications Programs. Also, Thomas F. Dixon was appointed Deputy Associate Administrator; Abe Silverstein was named director of Lewis Research Center, and Robert R. Gilruth was chosen Director of the Manned Spacecraft Center.

Evaluation of the Mercury inflatable floatation collar, attached by ground personnel to sustain spacecraft buoyancy during recovery operations, was completed.

The Line Forms to the Right



CHOW TIME—Those grown-ups could stand around and chatter if they wanted to, but these two youngsters at last year's MSC Picnic decided that time was wasting and that the fried chicken was getting cold. The 1966 MSC Picnic is scheduled for Saturday, October 1, at Galveston County Park in League City. Sponsored by the MSC Employee Activities Association, the picnic will have an old-West motif, replete with saloon, Boot Hill, general store and other such horse-opera trappings. The EAA Picnic Committee is looking for volunteers to help with picnic arrangements. (See August 19 Roundup for roster of committeemen.)

Western Musicians Sought

Talent in the form of lead and rhythm guitar players, bull fiddle and bass guitar players, fiddlers, drummers and vocalists are being sought to form an MSC

western swing band to perform at the November talent show.

All musicians must have their own instruments and a practice hall will be available. Interested MSC and contractor employees should contact Juanita Bower at 2737 or James R. Bates (steel guitar player) at 4846.

Help MSC reach its quota in the 1967 United Fund Campaign by pledging your fair share.

Bridge Clubbers Place High in Sectional Meet

Winners of the August Club Master Point August 30 were: North-South, Bill DeGeorge and Paul Swanzy, first; Edith Reid and Betty Leighton, second. East-West: D. Leighton and H. Portor, first. Ray Lynch and John Gordon, second. At the August 16 game, Tom Holt and Leona Kempainen were first North-South; Jim Fentress and Craig Castle, second. East-West first place went to Floyd Goostree and Arthur Carlson, with Larry and Marilyn Gallagher, second. On Aug. 23, Edith Reid and Betty Leighton were first North-South. Tom Holt and Tim Willis, second; Arthur Carlson and Floyd Goostree, first East-West, and Glenna Hooper and Elizabeth Dauman, second.

MSC Club members who participated in the recent Sectional Tournament at the Rice Hotel placed in several events. Max Cone and Paul Swanzy had a section first and fourth overall in the Consolations of the Open Pairs. Leona Kempainen had a section second and sixth overall in the same event. Marilyn and Larry Gallagher won a section third in the Mixed Pairs, and Robert Wiley and Joe Snyder won a section third in the qualifying session of the Open Pairs.

The Club Master Point for September will be held on the 27th.

MSC BOWLING ROUNDUP

MIMOSA MEN'S LEAGUE TEAM	WON	LOST
Whirlwinds	7	1
Technics	7	1
Strikers	6	2
Road Runners	5	3
Chizzlers	4	4
Alley Oops	4	4
Agitators	4	4
Real Timers	4	4
Hustlers	3	5
Weightless Wonders	2	6
Fabricators	1	7
Foul Five	1	7

Sun Valley Methodists Plan Spaghetti Dinner

MSC employees living in the Sun Valley addition area are invited to attend a spaghetti dinner tomorrow night at the Sun Valley Methodist Church. The dinner will run from 5 to 8 pm and is sponsored by the Methodist Men of the church, located at 10320 Hartsock.

Dinner tickets may be bought at the church or from Lyle Ferguson, Ext. 7701 or HU 6-4035, and run \$1 for adults and \$.50 for children.

Group Blood Program Starts MSC Collection

MSC employees began Wednesday and yesterday banking pints of blood in the EAA-sponsored MSC Group Blood Deposit Program. The Bloodmobile from Blood Services of Houston was stationed near the dispensary entrance of Building 8 and will be at the same place for blood deposits on September 21-22, September 28-29 and October 5-6.

All MSC federal and support contractor employees are eligible to take part in the Group Blood Deposit Program. A family is a Program participant when one member of the family donates blood. Federal employees' time spent in going to the Bloodmobile will be charged to excused absence.

To donate blood, an individual must

- be between 18 and 60. (Written parental permission required between 18 and 21 unless married or in military service.)

- weigh at least 110 pounds.
- avoid fatty foods or dairy products during four hours before donating blood; preferably only water, soft drinks,

fruit juices, black coffee or toast.

- not have given blood within last eight weeks; maximum of five donations during 12-month period.

- never give blood if there is a history of viral hepatitis, syphilis, tuberculosis, heart disease, epilepsy, rheumatic fever, frequent fainting spells, severe head injury, convulsions, kidney disease, severe allergy, abnormal bleeding, drug addiction, or diabetes requiring special diet or insulin.

- not give blood now with a recent history of major surgery, blood transfusions, pregnancy, malaria, immunizations, severe injury, alcoholism, prolonged fever, tattoo, excessive weight loss, persistent cough, pains in the chest, shortness of breath, edema, or close contact with someone having hepatitis, or if individual is taking medicine for an illness, has a severe cold or sore throat, skin disease, arthritis, hay fever or asthma.

- not give blood if within 12 hours after giving individual operates power machinery, trucks, busses, emergency vehicles, climbs poles, ladders or scaffolds. Flight crews should wait 72 hours after giving before flying.

Tests to determine an individual's ability to give blood with no ill effects—temperature, pulse, blood pressure, hemoglobin—are made by Bloodmobile nurses.

For further information on participating in the MSC Group Blood Deposit Program, call the nearest EAA committeeman: Chairman Ed Stelly, 3378 Bldg. 15; Don Bray 4766, Bldg. 45; Howard Allison 4611, Bldg. 8; Sandy Burdsal 5156, Bldg. 4; and Hal Bishop 5333, Bldg. 2.

Roundup Swap-Shop

(Deadline for classified ads is the Friday preceding Roundup publication date. Ads received after the deadline will be run in the next following issue. Send ads in writing to Roundup Editor, AP3. Ads will not be repeated unless requested. Use name and home telephone number.)

FOR SALE

Lotus 7 spares for many engines. Pair of 1½" SU carbs, Volvo w/ford-Lotus manifolds and linkage \$35. (Healey, TR, etc) Coxworth A-111 billet cam \$40. Stock Anglia 105-E gearbox \$35 complete. Jon Farbman, WA 6-7192 or RI 7-3435.

1960 Pontiac Star Chief 4-door sedan, power brakes/steering, radio, air, good tires and engine. Vance Jones, HU 4-1321.

3-bdr 2-bath brick colonial in El Lago, air conditioned, landscaped, GE built-ins. \$23,400 or equity and assume \$110/mo payments. Frank Samonski, 877-4795.

1965 Corvette conv, leather trim, 4-speed stick, C&C group, tinted glass, wood steering wheel, AM/FM radio, transistorized ignition, positraction axle, 365-hp engine, good condition. Bill Ritz, 591-3352.

Cal-30 racing/cruising auxiliary sloop Satori, sleeps 6, completely equipped for offshore racing and cruising. 9 sails, impressive sailing record. \$13,500. Can be seen at Houston Yacht Club. P. A. Gaechter, GR 1-1663.

1960 Volkswagen, 46,000 miles. \$575. Dick Kohrs, MI 5-0478.

1965 Volkswagen deluxe sedan, air, AM/FM w/stereo, other extras. 17,500 miles, xclnt condition. \$1650. E. Kuykendall, 591-4096.

1964 18-foot Glaspar cabin cruiser, sleeps 2, head, 60-hp Johnson elec-start outboard, tilt trailer, many extras, perfect condition. Best offer over \$2,000. Jack Small, 591-2315.

Complete set World Book Encyclopedia, deluxe white binding, perfect condition. \$45. Norman Robinson, RI 7-9892.

1963 TR-4, \$400 spent in engine mods, multi-coat metallic-blue lacquer, baby-blue flake steering wheel, 4-speed, transistor radio, new clutch, 31,000 actual miles, 4 xclnt Michelin X-line racing tires, wire wheels, heater, "Tiger" horn, other extras. Montgomery, PR 4-3665.

3-inch reflector telescope with altazimuth mount, tripod, 3x starfinder, 2 eyepieces (50 x and 140x), coated optics; clearly shows Saturn's rings, Jupiter's moons. Like new. Cost \$59.50, sell for \$30. Jakey Wood, 203 Bayou Drive, El Lago, 877-4705.

3-bdr 2-bath brick in El Lago, central air. John Bertin, 877-3307.

Coppertone Lady Kenmore washing machine, \$150. Light avocado-green naugahyde sofa, \$60. Coppertone fully-automatic Kenmore gas range w/teflon grill, \$150. 2 walnut step tables, \$20 each; matching coffeetable, \$20. Automatic Kenmore 4-slice toaster, \$12. 12-speed Kenmore mixer, \$20. Mary Sylvia, GR 3-5967.

3-bdr 2-bath 1,700 sq ft in McGregor Palms, large den, living-dining room, central heat/air, carpets, dishwasher, sewing room. \$14,425 FHA. Don Donohoe, MI 5-6751.

Genuine Gadey (1871) colored fashion prints and black-and-white etchings. Not reproductions. \$15 each. F. E. Webster, HU 4-7901.

1960 Pontiac Ventura 4-dr hardtop, fully loaded, air, radio, power brakes/steering/seat/windows. Xclnt condition. Sell for wholesale value (\$400) or best offer. C. D. Thompson, HU 6-7768.

2-wheel utility trailer \$30. 20-inch ½-hp lawnmower \$25. D. Huseby, GR 2-4137.

36-inch gas range \$20. 20-inch 2-speed reversible window fan \$15. T. D. Jeffcoat, HU 4-5749.

Swan 240 tranceiver, SW-117AC PS, Adcom 350-12 PS, microphone, mobile antenna and miscellaneous other items. All for \$350. C. E. Propp, HU 6-7119.

1964 Chevrolet Impala super sport, all super sport equipment including bucket seats, Daytona blue w/light blue interior, 327-hp engine, power glide, power steering and power brakes, tilt steering wheel, factory air, tinted glass, AM-FM radio. W. G. Pratt, HU 3-2505.

WANTED

FM and stereo system. John Patterson, HU 7-2655.

FOR RENT

Unfurnished 3-bdr house, airconditioned, range, refrigerator, dishwasher, large fenced yard, completely redecorated inside and out. Exit 15 Gulf Fwy. Available late September. One-year lease, \$120/mo. Ron Konkel, HU 4-1020.

RIDER POOLS

Want in car pool or will pay beginning Sept. 6 from 2607 Cedar Drive, La Marque to Bldg. 419, 7:30-4 shift. Evelyn Villeneuve, WE 5-3878.

Paying rider wants daily ride between MSC and vicinity Shepherd and Westheimer-San Felipe. Sig Byrd, JA 4-5624.

Who is Boss Around Here?

Have you ever wondered who is the real boss of the MSC Federal Credit Union?

Well, there is the Board of Directors, the president and other officers, the treasurer or manager who is in charge of the Credit Union office operations. And in addition, there is the Credit Committee and the Supervisory (audit) Committee, all of which serve important functions.

But none of these is the boss. You are the boss . . . you and all the other members of the Credit Union. That is what makes a credit union different—it is owned and controlled by the members.

Of course you and your fellow members elect officers at the annual membership meeting who are charged with directing the operations of the Credit Union, but fundamentally you are the boss.

We wouldn't have it any other way!

Space News ROUNDUP!

SECOND FRONT PAGE



CLEAR! CONTACT!—Charlotte Smith of the MSC Biomedical Research Office prepares to start the engine of a Cherokee and take off on one of her weekend flights from Houston International Airport in which she builds up flying time toward her private pilot's license.

PETTICOAT PILOT—

'Wild Blue' Not Wild For MSC Aviatrix

Except for such names as Jacqueline Cochran and Amelia Earhart, flying has always been thought of as primarily a man's profession or hobby. But Charlotte Smith, a physiologist in the Biomedical Research Office, has joined the growing number of women who are proving that flying is not just for men or for the birds.

Charlotte tries to get in at least two flights each weekend of one to one-and-a-half hours—Houston's monsoon season permitting. As of *Roundup* press time, she has logged a total of 31 hours and 40 minutes in the air, an hour and five minutes of which was solo time. By the time *Roundup* gets into distribution, she likely will have logged another two or three solo hours, thanks to whom she calls her "most patient" instructor, James McFarlin.

Flying from busy Houston International Airport, Charlotte is getting extensive practice in aircraft-to-tower radio procedures while building her flying proficiency. She flies a Piper Cherokee now, but when she started flying a year and a half ago, she logged 10 hours in an Ercoupe—a low-wing two-place airplane in which the rudders and ailerons are cross-coupled for control by wheel only. Since she is a paraplegic, the Cherokee she flies now is fitted with a special device that permits the rudder to be controlled by a hand lever in the center of the cabin floor.

A member of a local aviatrix organization called the "Petticoat Pilots," Charlotte is shooting for her private pilot's license. "I'll worry about getting an instrument rating or a commercial ticket when the time comes," she said. "Right now, I'm busy getting my private."

Like everyone who flies for the fun of it, Charlotte has the ambition of someday having her own airplane—probably a Cherokee. "But that'll be a while yet; a new car comes first."

When leisure hours and runways are "socked-in" by bad weather, she reads a great deal—mostly history, philosophy and other non-fiction. "I made a count recently," she said, "and found that I subscribed to 14 periodicals. That's when I decided something had to go."

X-15 Completes Most Successful Flight Month

The X-15 flight research program has just completed its most active flight month since its first powered flight seven years ago this year.

Seven flights of the three rocket-powered aircraft were made during the month of August, one more than had ever been flown in a single month.

The seven flights performed a wide variety of scientific missions with the major emphasis upon the X-15 as a carrier of scientific experiments that could not be performed otherwise. The flights were made from the NASA Flight Research Center, Edwards, Calif.

Two of the flights were made with special ultraviolet cameras to photograph various stars to verify theoretical data on the chemical composition of the stars. Two flights carried photometers equivalent to the photometers that will be used by the Apollo spacecraft in its return trip to earth from the moon. Two other flights carried a spectrometer that was used to measure the intensity and spectral distortion of the daytime sky background. Another flight was specially designed to investigate the heating effects of high-speed flight. During the course of the series of flights, samples of extraterrestrial dust floating in space at altitudes in excess of 40 miles were collected for ground analysis.

The highest altitude achieved during the flights conducted during August 1966, was 256,000 feet. The maximum speed was 3,682 miles per hour. The seven flights made a total of 170 flights in the joint NASA-USAF X-15 research program.

Elms Named Director Of Electronics Center

James C. Elms, NASA deputy associate administrator for manned space flight and former MSC deputy director, has been named director of the NASA Electronic Research Center in Cambridge, Mass. Elms succeeds the Center's first director, Dr. Winston E. Kock, who has resigned to return to private industry. The change is effective October 1.

Dr. Kock has been the ERC director since the Center was formally established September 1, 1964 to pioneer work in space and aeronautical electronics. Previously he was vice-president-research of the Bendix Corp., Detroit. He returned to Bendix as vice-president and chief scientist and will serve as a member of the Administration Committee.

Elms joined NASA Headquarters September 1, 1965 as deputy associate administrator for manned space flight.



Previous to this appointment he was vice-president and general manager of the Space and Information Systems Division, Raytheon Co., Sudbury, Mass. Before his association with Raytheon he was the deputy director of MSC from February 1963 to March 1964, charged with responsibilities for general management of the Center.

He has served in key management roles at North American Aviation in the development of fire control and radar bombing systems and at the Denver Division of The Martin Co. on the Titan I missile. Later, he was executive vice-president of the Crosley Division AVCO, and after this position with AVCO, he was a director of space and electronics for the Ford Motor Co.'s Aeronautic Division.

Elms received his BS degree in physics from the California Institute of Technology and his MA in physics from the University of California at Los Angeles, where he was a member of the faculty as a research associate in the Institute of Geophysics.

He served in the Air Force during World War II. At the time he left the Air Force he was head of the Guided Missile Unit of the Armament Laboratory.

A native of East Orange, N. J., Elms was born May 16, 1916. He is married to the former Patricia Marguerite Pafford of Phoenix, Ariz. The couple has four children: Christopher Michael 21, Suzanne 18, Francesca 16, and Debora 12. He resides at 67 Maugus Ave., Wellesley Hills, Mass.



Kickoff Whistle



PEP TALK—Salvation Army District Commander Brigadier James Prout gives an inspirational message on the workings of United Fund-sponsored agencies to MSC division team captains at Tuesday's MSC United Fund kickoff meeting in the auditorium. The MSC drive begins Monday and runs through the end of September.

Surveyor B

(Continued from page 1)

nearly vertical descent—approaching at an angle only six degrees off the perpendicular.

However, Surveyor B will approach the Moon at an angle of 23 degrees from the vertical. Successful accomplishment of such a soft landing will demonstrate the ability of the spacecraft to soft-land in the eastern quadrant of the Moon.

Surveyor B will be equipped identically to Surveyor I, carrying a survey television camera and engineering instrumentation. It will also obtain data on the radar reflectivity, mechanical properties, and thermal conditions of the lunar surface.

At launch, Surveyor B will weigh 2,204 pounds. The retro-motor, which will be jettisoned after burnout, weighs 1,395 pounds. After expenditure of liquid propellants and use of attitude control gas, the landed weight of Surveyor on the Moon will be about 620 pounds.

On the first possible launch date, Tuesday Sept. 20, the window will open as early as 5:51 am CST and close at 7:33 am. This would make its arrival at the Moon about 8:30 pm CST, Thursday Sept. 22.

The Surveyor program is directed by NASA's Office of Space Science and Applications. Project management is assigned to NASA's Jet Propulsion Laboratory operated by the California Institute of Technology, Pasadena. Hughes Aircraft Co., under contract to JPL, designed and built the Surveyor spacecraft. NASA's Lewis Research Center, Cleveland, is responsible for the Atlas first stage booster and for the second stage Centaur, both developed by General Dynamics/Convair, San Diego, Cal. Launch operations are directed by Kennedy Space Center, Fla.

Tracking and communication with the Surveyor is the responsibility of the NASA/JPL Deep Space Network (DSN). The stations assigned to the Surveyor program are Pioneer, at Goldstone in California's Mojave Desert; Johannesburg, South Africa; Ascension Island in the South Atlantic; and Tidbinbilla near Canberra, Australia. Data from the stations will be transmitted to JPL's Space Flight Operations Facility in Pasadena, the command center for the mission.